

ABSTRACT OF DISCLOSURE

A diffractive structure for responding to incident radiation includes a substrate having a diffractive surface and a coating layer disposed over the diffractive surface, the 5 coating layer having an index of refraction substantially different from that of the substrate. The diffractive surface comprises a three-dimensional pattern selected to diffract incident radiation with substantial efficiency into one or more diffraction orders other than the first order and to redirect the diffracted radiation from the structure in at least two directions at angles that are greater than a critical angle required for total 10 internal reflection. In application of the diffractive structure to solar cell modules, a diffractive structure disposed in spaces between plural solar cells redirects incident radiation from the area within the spaces onto the solar cells, thus concentrating solar radiation onto the cells.